

WHAT IS CLAIMED IS:

1. A wireless appliance for monitoring a vehicle, comprising:
 - (a) a microprocessor configured to select a vehicle-communication protocol of a host vehicle and communicate with the host vehicle through the vehicle-communication protocol;
 - (b) a vehicle-communication circuit, in electrical communication with the microprocessor, configured to collect diagnostic data from the host vehicle using the vehicle-communication protocol;
 - (c) a GPS module, in electrical communication with the microprocessor, configured to generate location-based data;
 - (d) a first wireless transmitter operating on a terrestrial network and configured to receive and transmit data generated by the GPS module and collected by the vehicle-communication circuit; and
 - (e) a second wireless transmitter operating on a satellite network and configured to receive and transmit data generated by the GPS module and collected by the vehicle-communication circuit,

wherein the microprocessor is further configured to determine at least one of coverage associated with the terrestrial network and coverage associated with the satellite network, and

wherein the microprocessor is further configured to select the first or second wireless transmitter to transmit the diagnostic and location-based data.

2. A wireless appliance for monitoring a vehicle, comprising:
 - (a) a microprocessor configured to select a vehicle-communication protocol of a host vehicle and communicate with the host vehicle through the vehicle-communication protocol;

(b) a vehicle-communication circuit, in electrical communication with the microprocessor, configured to collect diagnostic data from the host vehicle using the vehicle-communication protocol;

(c) a first wireless transmitter operating on a terrestrial network and configured to receive and transmit data collected by the vehicle-communication circuit; and

(d) a second wireless transmitter operating on a satellite network and configured to receive and transmit data collected by the vehicle-communication circuit,

wherein the microprocessor is further configured to select the first or second wireless transmitter to transmit the diagnostic data.

3. The wireless appliance of claim 2, further comprising:

(a) a GPS module, in electrical communication with the microprocessor, configured to generate location-based data,

wherein the first wireless transmitter is further configured to receive and transmit data generated by the GPS module,

wherein the second wireless transmitter is further configured to receive and transmit data generated by the GPS module, and

wherein the microprocessor is further configured to select the first or second wireless transmitter to transmit the location-based data.

4. The wireless appliance of claim 3, further comprising:

(a) a GPS antenna in electrical contact with the GPS module;

(b) radio antennas in electrical contact with the respective first and second wireless transmitters; and

(c) a single housing that houses the GPS antenna, the radio antennas, the microprocessor, the vehicle-communication circuit, the GPS module, and the first and second wireless transmitters.

5. The wireless appliance of claim 3, further comprising a single chipset that comprises the GPS module and the first and second wireless transmitters.

6. The wireless appliance of claim 2, wherein the microprocessor is further configured to determine at least one of coverage associated with the terrestrial network and coverage associated with the satellite network.

7. The wireless appliance of claim 6, wherein the first wireless transmitter is selected if coverage associated with the terrestrial network satisfies at least one sufficiency criterion.

8. The wireless appliance of claim 6, wherein the second wireless transmitter is selected if coverage associated with the terrestrial network does not satisfy at least one sufficiency criterion.

9. The wireless appliance of claim 6, wherein the microprocessor is further configured to analyze at least one of radio-frequency signal strengths associated with the terrestrial network and radio-frequency signal strengths associated with the satellite network.

10. The wireless appliance of claim 6, wherein the microprocessor is further configured to access at least one memory module including coverage information associated with at least one of the terrestrial network and the satellite network.

11. The wireless appliance of claim 10, wherein the coverage information is provided in a programmed table arranged to correlate vehicle-location information and coverage information.

12. The wireless appliance of claim 2, wherein the first and second wireless transmitters are configured to at least in part simultaneously transmit data.

13. The wireless appliance of claim 2, wherein the host vehicle is selected from a group comprising an automobile, truck, wheeled commercial equipment, medium-duty truck, heavy-duty truck, construction vehicle, power sport vehicle, collision repair vehicle, marine vehicle, and recreational vehicle.

14. The wireless appliance of claim 2, wherein the wireless appliance is configured to query an engine control unit (ECU) of the vehicle.

15. The wireless appliance of claim 2, further comprising an internal battery.

16. The wireless appliance of claim 15, wherein the internal battery includes a solar cell.

17. The wireless appliance of claim 15, further comprising a power-conditioning circuit configured to be in electrical communication with the internal battery and a power source of the vehicle.

18. The wireless appliance of claim 2, wherein at least one of the first and second transmitters comprises a wireless modem.

19. The wireless appliance of claim 18, wherein the wireless modem utilizes an active antenna.

20. The wireless appliance of claim 2, further comprising a modem adaptor configured to interface the microprocessor and the wireless modem.

21. The wireless appliance of claim 2, wherein the vehicle-communication circuit is configured to be interfaced with a diagnostic connector in the vehicle.

22. The wireless appliance of claim 21, wherein the wireless appliance is configured to receive power, at least in part, via the diagnostic connector.

23. The wireless appliance of claim 21, wherein the diagnostic connector is an OBD-II connector.

24. The wireless appliance of claim 21, wherein the diagnostic connector is a J1708 connector.

25. The wireless appliance of claim 21, wherein the wireless appliance is configured to be attached to the diagnostic connector via a wiring harness.

26. The wireless appliance of claim 2, wherein the wireless appliance is configured to be interfaced with at least one sensor in the vehicle.

27. The wireless appliance of claim 26, wherein the at least one sensor comprises a tire pressure or temperature sensor.

28. The wireless appliance of claim 26, wherein the at least one sensor comprises an accelerometer.

29. The wireless appliance of claim 2, wherein the wireless appliance is configured to be directly interfaced with an electrical system of the vehicle.

30. The wireless appliance of claim 2, wherein the first and second wireless transmitters are contained in a single ASIC.

31. The wireless appliance of claim 2, wherein the vehicle-communication circuit includes modules that each manage a vehicle-communication protocol.

32. The wireless appliance of claim 31, wherein a module in the vehicle-communication circuit comprises a circuit configured to support at least one of the J1850 PWM, J1850 VPWM, ISO 9141-2, CAN, Keyword 2000, and J1708 vehicle-communication protocols.

33. The wireless appliance of claim 2, wherein the wireless appliance is configured to transmit data over at least one local wireless network.

34. The wireless appliance of claim 33, wherein the at least one local wireless network is a Bluetooth-based network.

35. The wireless appliance of claim 2, wherein the microprocessor is further configured to at least attempt communication using the first wireless transmitter before the second wireless transmitter.

36. A wireless appliance for monitoring a vehicle, comprising:

- (a) a microprocessor;
- (b) a GPS module, in electrical communication with the microprocessor, configured to generate location-based data;
- (c) a first wireless transmitter operating on a terrestrial network and configured to receive and transmit data generated by the GPS module through the terrestrial network to an Internet-accessible website; and
- (d) a second wireless transmitter operating on a satellite network and configured to receive and transmit data generated by the GPS module through the satellite network to the Internet-accessible website,

wherein the microprocessor is configured to select the first or second wireless transmitter to transmit the location-based data.

37. The wireless appliance of claim 36, wherein the terrestrial network includes at least one of a CDMA, GSM/GPRS, Mobitex, DataTac, and Reflex network.

38. The wireless appliance of claim 36, wherein the satellite network includes at least one of an Orbcomm and Globalstar network.

39. The wireless appliance of claim 36, further comprising:

- (a) a GPS antenna in electrical contact with the GPS module;
- (b) radio antennas in electrical contact with the respective first and second wireless transmitters; and
- (c) a single housing that houses the GPS antenna, the radio antennas, the microprocessor, the GPS module, and the first and second wireless transmitters.

40. A monitorable vehicle, comprising:

- (a) a vehicle including an on-board diagnostic system configured to query data relating to the vehicle; and
 - (b) a wireless appliance, comprising,
 - (i) a microprocessor configured to select a vehicle-communication protocol of the vehicle and communicate with the vehicle through the vehicle-communication protocol;
 - (ii) a vehicle-communication circuit, in electrical communication with the microprocessor, configured to collect diagnostic data from the vehicle using the vehicle-communication protocol, wherein the vehicle-communication circuit is interfaced with the on-board diagnostic system;
 - (iii) a first wireless transmitter operating on a terrestrial network and configured to receive and transmit data collected by the vehicle-communication circuit; and
 - (iv) a second wireless transmitter operating on a satellite network and configured to receive and transmit data collected by the vehicle-communication circuit,

wherein the microprocessor is further configured to select the first or second wireless transmitter to transmit the diagnostic data.

41. The monitorable vehicle of claim 40, wherein the vehicle is selected from a group comprising an automobile, truck, wheeled commercial equipment, medium-duty truck, heavy-duty truck, construction vehicle, power sport vehicle, collision repair vehicle, marine vehicle, and recreational vehicle.

42. The monitorable vehicle of claim 40, wherein the vehicle-communication circuit is interfaced with the on-board diagnostic system via a diagnostic connector.

43. The monitorable vehicle of claim 42, wherein the wireless appliance is attached to the diagnostic connector via a wiring harness.

44. The monitorable vehicle of claim 40, wherein the vehicle-communication circuit is directly interfaced with an electrical system of the vehicle.

45. The monitorable vehicle of claim 40, wherein the wireless appliance further comprises:

(i) a GPS module, in electrical communication with the microprocessor, configured to generate location-based data,

wherein the first wireless transmitter is further configured to receive and transmit data generated by the GPS module,

wherein the second wireless transmitter is further configured to receive and transmit data generated by the GPS module, and

wherein the microprocessor is further configured to select the first or second wireless transmitter to transmit the location-based data.

46. The monitorable vehicle of claim 45, wherein the wireless appliance further comprises:

- (i) a GPS antenna in electrical contact with the GPS module;
- (ii) radio antennas in electrical contact with the respective first and second wireless transmitters; and
- (iii) a single housing that houses the GPS antenna, the radio antennas, the microprocessor, the vehicle-communication circuit, the GPS module, and the first and second wireless transmitters.

47. A wireless appliance for monitoring a vehicle, comprising:

- (a) a microprocessor including firmware configured to select a vehicle-communication protocol of a host vehicle and communicate with the host vehicle using the vehicle-communication protocol;
- (b) a vehicle-communication circuit, in electrical communication with the microprocessor, configured to collect diagnostic data from the host vehicle using the vehicle-communication protocol, wherein the vehicle-communication circuit is configured to support multiple different vehicle-communication protocols;
- (c) a first wireless transmitter operating on a terrestrial network and configured to receive and transmit data collected by the vehicle-communication circuit; and
- (d) a second wireless transmitter operating on a satellite network and configured to receive and transmit data collected by the vehicle-communication circuit,

wherein the firmware is further configured to select the first or second wireless transmitter to transmit the diagnostic data, and

wherein the firmware is further configured to at least attempt communication using the first wireless transmitter before the second wireless transmitter.

48. The wireless appliance of claim 47, wherein the firmware is further configured to determine at least one of coverage associated with the terrestrial network and coverage associated with the satellite network.

49. The wireless appliance of claim 48, wherein the first wireless transmitter is selected if coverage associated with the terrestrial network satisfies at least one sufficiency criterion.

50. The wireless appliance of claim 48, wherein the second wireless transmitter is selected if coverage associated with the terrestrial network does not satisfy at least one sufficiency criterion.

51. The wireless appliance of claim 48, wherein the firmware is further configured to analyze at least one of radio-frequency signal strengths associated with the terrestrial network and radio-frequency signal strengths associated with the satellite network.

52. The wireless appliance of claim 48, wherein the firmware is further configured to access at least one memory module including coverage information associated with at least one of the terrestrial network and the satellite network.

53. The wireless appliance of claim 52, wherein the coverage information is provided in a programmed table arranged to correlate vehicle-location information and coverage information.

54. The wireless appliance of claim 47, wherein the first and second wireless transmitters are configured to at least in part simultaneously transmit data.

55. The wireless appliance of claim 47, further comprising:

(a) a GPS module, in electrical communication with the microprocessor, configured to generate location-based data,

wherein the first wireless transmitter is further configured to receive and transmit data generated by the GPS module,

wherein the second wireless transmitter is further configured to receive and transmit data generated by the GPS module, and

wherein the firmware is further configured to select the first or second wireless transmitter to transmit the location-based data.

56. A wireless appliance for monitoring a vehicle, comprising:

(a) a microprocessor configured to select a vehicle-communication protocol of a host vehicle and communicate with the host vehicle through the vehicle-communication protocol;

(b) a vehicle-communication circuit, in electrical communication with the microprocessor, configured to collect diagnostic data from the host vehicle using the vehicle-communication protocol;

(c) a satellite modem operating on a satellite network and configured to receive and transmit data collected by the vehicle-communication circuit; and

(d) an antenna connected to the satellite modem.

57. The wireless appliance of claim 56, wherein the antenna comprises a patch antenna.

58. The wireless appliance of claim 57, wherein the patch antenna is adhered to a windshield of the vehicle or embedded within glass of the windshield.

59. The wireless appliance of claim 56, further comprising:

(a) a terrestrial modem operating on a terrestrial network and configured to receive and transmit data collected by the vehicle-communication circuit,

wherein the microprocessor is further configured to select the satellite modem or terrestrial modem to transmit the diagnostic data, and

wherein the microprocessor is further configured to at least attempt communication using the terrestrial modem before the satellite modem.

60. The wireless appliance of claim 59, further comprising:

(a) a GPS module, in electrical communication with the microprocessor, configured to generate location-based data,

wherein the satellite modem is further configured to receive and transmit data generated by the GPS module,

wherein the terrestrial modem is further configured to receive and transmit data generated by the GPS module, and

wherein the microprocessor is further configured to select the satellite modem or terrestrial modem to transmit the location-based data.

61. A wireless appliance for monitoring a vehicle, comprising:

- (a) a microprocessor configured to select a vehicle-communication protocol of a host vehicle and communicate with the host vehicle through the vehicle-communication protocol;
- (b) a vehicle-communication circuit, in electrical communication with the microprocessor, configured to collect diagnostic data from the host vehicle using the vehicle-communication protocol, wherein the vehicle-communication circuit is configured to support multiple different vehicle-communication protocols; and
- (c) a satellite modem operating on a satellite network and configured to receive and transmit data collected by the vehicle-communication circuit.

62. The wireless appliance of claim 61, further comprising:

- (a) a GPS module, in electrical communication with the microprocessor, configured to generate location-based data,
wherein the satellite modem is further configured to receive and transmit data generated by the GPS module.

63. A system for monitoring a plurality of vehicles, comprising:

- a software gateway configured to receive diagnostic and location-based data wirelessly transmitted from a plurality of vehicles, the software gateway including,
 - (i) a first software adapter configured to receive and process incoming data packets from a terrestrial network and reformat the processed data in a predetermined format; and
 - (ii) a second software adapter configured to receive and process incoming data packets from a satellite network and reformat the processed data in the predetermined format,

wherein the first and second software adapters are further configured to store at least a portion of the respectively reformatted data in a database compatible with the predetermined format,

wherein the first software adapter is further configured to format outgoing data packets in a format associated with the terrestrial network, and

wherein the second software adapter is further configured to format outgoing data packets in a format associated with the satellite network.

64. The system of claim 63, wherein the incoming data packets from the terrestrial network are received from a point-of-presence (POP) of the terrestrial network.

65. The system of claim 63, wherein the incoming data packets from the satellite network are received from a point-of-presence (POP) of the satellite network.

66. The system of claim 63, wherein the database is associated with a central computer system.

67. The system of claim 66, wherein at least a portion of the data in the database is provided to a user via an Internet-accessible website associated with the central computer system.

68. A system for monitoring a plurality of vehicles, comprising:
(a) a wireless appliance configured to selectively transmit diagnostic and location-based data of a host vehicle on a terrestrial network and a satellite network, wherein the wireless appliance is compatible with a plurality of vehicle-communication protocols and interfaced with

a diagnostic system of the host vehicle, the wireless appliance including a vehicle-communication circuit, a GPS module, a terrestrial modem, and a satellite modem; and

(b) a central computer system including a software gateway, the software gateway configured to receive diagnostic and location-based data wirelessly transmitted from a plurality of vehicles including the host vehicle, the software gateway including,

(i) a first software adapter configured to receive and process incoming data packets from a terrestrial network and reformat the processed data in a predetermined format, and

(ii) a second software adapter configured to receive and process incoming data packets from a satellite network and reformat the processed data in the predetermined format,

wherein the first and second software adapters are further configured to store at least a portion of the respectively reformatted data in a database compatible with the predetermined format, and

wherein the central computer system is configured to access data in the database and display the database data on at least one Internet-accessible website.

69. The system of claim 68, wherein the first software adapter is further configured to format outgoing data packets in a format associated with the terrestrial network, and wherein the second software adapter is further configured to format outgoing data packets in a format associated with the satellite network.

70. The system of claim 68, wherein the host vehicle is selected from a group comprising an automobile, truck, wheeled commercial equipment, medium-duty truck, heavy-

duty truck, construction vehicle, power sport vehicle, collision repair vehicle, marine vehicle, and recreational vehicle.

71. A wireless appliance for monitoring a vehicle, comprising:
 - an interface board configured to be connected, via a respective cable, to one or both of a wireless terrestrial modem and a wireless satellite modem,
 - the interface board including,
 - (i) a serial communication module configured to manage communication between a connected wireless terrestrial modem and a connected wireless satellite modem, wherein the serial communication module includes a serial communication protocol converter component and a data relay component to transfer data between the connected modems; and
 - (ii) a power management module configured to receive power from a power supply associated with the connected wireless terrestrial modem and to convert the power into power required by the connected wireless satellite modem.

72. The wireless appliance of claim 71, wherein the wireless appliance includes the wireless terrestrial modem.

73. The wireless appliance of claim 72, wherein the wireless appliance includes the wireless satellite modem.